

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013587

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ C07C15/085, 1/24, 5/03

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C07C15/085, 1/24, 5/03

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CA (STN), REGISTRY (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, A	JP 2004-250430 A (Sumitomo Chemical Co., Ltd.), 09 September, 2004 (09.09.04), Full text & WO 04/058667 A1	1-6
A	European Chemical News, 2001, Vol.74, No.1947, pages 5 to 11	1-6

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
14 October, 2004 (14.10.04)

Date of mailing of the international search report
02 November, 2004 (02.11.04)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

(With respect to scope of international search)

In the description, no example is specifically described in which cumene was produced by reacting cumyl alcohol with hydrogen in the presence of a catalyst mixture of a dehydration catalyst and a hydrogenation catalyst.

The fact that when cumyl alcohol is reacted with hydrogen in the presence of a catalyst mixture of a dehydration catalyst and a hydrogenation catalyst, then cumene can be yielded and by-product cumene dimers are diminished was not a matter of technical common sense for persons skilled in the art before the filing of this international application.

It is normal that the catalytic activity of a mixture of different catalysts can be additive or synergistic or can be antagonistic (e.g., the case where one catalyst is a catalytic poison to the other), depending on the kinds of the catalysts mixed or of the raw materials used.

It cannot be presumed from the above that the reaction of cumyl alcohol with hydrogen in the presence of a catalyst mixture of a dehydration catalyst and a hydrogenation catalyst gives cumene and further attains the diminution of cumene dimers.

The same applies to processes in which a dehydration catalyst other than activated alumina and a hydrogenation catalyst other than palladium/alumina are packed so as to form layers (it cannot be presumed that cumene dimer diminution is possible with a combination of different catalysts).

Claims 1-6 in this international application are not sufficiently supported by the description. It cannot hence be clearly judged as to how claims 1-6 are relevant to the prior art (in particular, whether claims 1-6 involve an inventive step).

Therefore, an international search was made only for "the process in which activated alumina and palladium/alumina have been alternately packed in a reactor so as to form n layers (n is 3 or larger)" among the processes of claims 1-6.